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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,941	03/10/2004	Ruud Philip Antoon Maria Segers	I 1997.267 US D2	6641

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EXAMINER	
HINES, JANA A	
ART UNIT	**PAPER NUMBER**
1645	

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/798,941	SEGERS ET AL.	
	Examiner	Art Unit	
	Ja-Na Hines	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 7-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 7-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Amendment Entry

1. The amendment filed March 10, 2004 has been entered. The examiner acknowledges the amendment to the specification. Claims 1-6 and 10-19 have been cancelled. Claims 7-9 have been amended. Claims 7-9 are under consideration in this office action.

Priority

2. If applicant desires benefit of a previously filed application under 35 U.S.C. 119, specific reference to the earlier filed application must be made in the instant application. For benefit claims under 35 U.S.C. 120, 121 or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications. This should appear as the first sentence(s) of the specification following the title, preferably as a separate paragraph unless it appears in an application data sheet. The status of nonprovisional parent application(s) (whether patented or abandoned) should also be included. If a parent application has become a patent, the expression "now Patent No. _____" should follow the filing date of the parent application. If a parent application has become abandoned, the expression "now abandoned" should follow the filing date of the parent application.

Specification

3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

4. Pages 17-18 and 20-21 of the specification refer to sequences without a corresponding sequence identification number. Therefore, appropriate correction is requested.

Drawings

5. Figure 2 refers to sequences without sequence identifying numbers being described within the figure itself or the brief description of the drawings within the specification. Therefore, appropriate correction is requested.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 7-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

The claims are drawn to a nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene. The dependant claims are drawn to the sequence being characterized in that it comprises the DNA fragment from position 451 to 1132 of SEQ ID NO:5 or a subfragment thereof still having promoter activity or characterized in that it comprises the DNA fragment from position 617 to 641 of SEQ ID NO:5.

The written description in this case does not disclose the identity of a nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene, therefore the written description is not commensurate in scope with the claims drawn to a nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene. Neither the specification nor the claims teach the identity of a nucleotide sequence that controls the expression of the *apxIV* gene. Thus applicants' were not in possession of a nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene. The specification does not include structural examples of a nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene that has corresponding characteristics. Thus, the resulting nucleotide sequence could result in a sequence not taught and enabled by the specification.

Vas-Cath Inc. V. Mahurkar, 19 USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought,

he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (*See Vas-Cath* at page 1116).

The instant specification states that a nucleotide sequence comprising DNA fragments from position 451 to 1132 of SEQ ID NO:5 or a subfragment are all that is necessary, see page 10. However, the instant specification fails to disclose a nucleotide sequence that corresponds to the claimed characteristics. Moreover, the specification refers to suitable fragments which express heterologous genes, thus there is evidence that other nucleotide sequences known in the art that have suitable characteristics. There is no teaching in the specification that discloses the identity of the sequence. In view of the lack of evidence, it is apparent that Applicants' were not in possession of additional sequences, at the time of filing the instant application such as a sequence that harbors a promoter controlling the expression of the *apxIV* gene. There is not an adequate description of the nucleotide sequence. Since the claim language embraces lots of variants and there is no description of the nucleotide sequence that encodes such, the description is insufficient since there is no structure described.

With the exception of SEQ ID NO:5, the skilled artisan cannot envision the detailed structure of the nucleotide sequence, thus conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. An adequate description requires more than a mere statement that it is part of the invention. The bacterium itself, or a nucleic acid structure is required. See *Fiers v. Revel*, 25 USPQ 2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. V. Chugai Pharmaceutical Co. Lts.*, 18 USPQ2d 1016. The harboring of a promoter controlling gene expression or having promoter activity distinguishes the claimed nucleotide

sequence only by what it does, i.e., controlling gene expression or having promoter activity, which are purely functional distinctions. Even where there is an actual reduction to practice, which may demonstrate possession of an embodiment of an invention, it does not necessarily describe what the claimed invention is. In the instant case, the specification and claims describe a nucleotide sequence by its function, harboring the promoter controlling the expression of the *apxIV* gene or having promoter activity, however this description does not describe the claimed nucleotide sequence itself, nor does it provide the identity of the nucleotide sequence. Thus, a description of the nucleic acid molecule by what it does, such as controlling gene expression is insufficient.

See also, *In The Reagents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), where the court held that a generic statement that defines a genus of nucleic acids by only their functional activity does not provide an adequate description of the genus. The court indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a DNA...'requires a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention".

In view of the lack of evidence, it is apparent that Applicants' were not in possession of additional nucleic acid molecules which control gene expression, at the time of filing the instant application. The skilled artisan cannot envision the detailed structure of the nucleotide sequence, thus conception is not achieved until reduction to practice has occurred. The instant specification and claims fail to describe a nucleic acid

molecule, it is noted that the function of the nucleic acid does not describe the claimed nucleic acid molecule itself. Thus, in the absence of the identity of the nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene, a nucleotide sequence described only by its ability to control the expression of the *apxIV* gene fails to meet the written description requirements. Therefore only the nucleotide sequence of SEQ ID NO:5, and not the full breadth of the claim meets the written description provision of 35 USC 112, first paragraph.

7. Claims 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Acronyms like *apxIV* must be spelled out when used for the first time in a chain of claims.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 7-9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Dreyfus et al., (2004) teach that ApxIV is expressed by all serotypes of *A. pleuropneumoniae* after infection of pigs (page 228). Thus, any pig with an *A. pleuropneumoniae* infection inherently comprises a nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene. Moreover, positions 451 to 1132 of SEQ ID NO:5 and positions 617 to 641 of SEQ ID NO:5 are the same nucleotides as those from the wild-type strain, thus, the nucleotide sequence naturally occurs. For example, a new mineral discovered in the earth or a

new plant found in the wild is not patentable subject matter. See M.P.E.P. 2105. Likewise, the nucleotide sequence instantly claimed occurs naturally and is not entitled to patent protection. The claimed sequence has no markedly different characteristics than any found in nature, therefore, the claims are drawn to non-statutory subject matter and not entitled to patent protection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Frey. The claims are drawn to a nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene. The dependant claims are drawn to the sequence being characterized in that it comprises the DNA fragment from position 451 to 1132 of SEQ ID NO:5 or a subfragment thereof still having promoter activity or characterized in that it comprises the DNA fragment from position 617 to 641 of SEQ ID NO:5.

Frey teach experimental models of *A. pleuropneumoniae* infected pigs or mice with the serotype strains 1,5,9 and 11 which are exceptionally virulent (page 258). The virulence associated with *A. pleuropneumoniae* is the most pathogenic bacteria because it is strongly correlated with the exotoxins (Apx toxins). Therefore, the pigs infected pigs express an *A. pleuropneumoniae* infection, clearly expressed the associated *ApxIV*

gene. Inherent in this gene expression is the inducement of the naturally occurring promoter found within the naturally occurring nucleotide sequence.

Thus, Frey teach a nucleotide sequence harboring the promoter controlling the expression of the *apxIV* gene comprising the naturally occurring nucleotide sequences at positions 451 to 1132 of SEQ ID NO:5 and positions 617 to 641 of SEQ ID NO:5.

Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schaller et al., teach characterization of apxIV, a new RTX determinant of *A. pleuropneumoniae.*

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ja-Na Hines whose telephone number is 571-272-0859. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith can be reached on 571-272-0864. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ja-Na Hines
March 16, 2005

L. F. Smith
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